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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/553,776	04/21/2000	Venugopal Srinivasan	28049/36451	6850

7590 09/30/2003

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EXAMINER

ODOM, CURTIS B

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 09/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/553,776

Applicant(s)

SRINIVASAN, VENUGOPAL

Examiner

Curtis B. Odom

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 42-51 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter. Claims 42-51 claim an electrical signal. An electrical signal does not fall into the category of a method, apparatus, product, or composition of matter. Therefore, the claims are rejected under 35 U.S.C 101 for being directed toward non-statutory subject matter.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Osawa (U.S. Patent No. 6, 167, 160).

Regarding claim 1, Osawa discloses an encoder (Fig. 2, block 22) having an input and an output, wherein the input receives a signal, wherein the encoder calculates an entropy (Fig. 2, block 26, column 3, lines 13-25, column 5, lines 17-52, column 6, lines 40-67) of at least a portion of the signal and encodes the signal with the calculated entropy, and wherein the output carries the encoded signal.

Regarding claim 2, which inherits the limitations of claim 1, Osawa does not disclose the signal is an audio signal. However, Osawa does disclose the encoding scheme works for arbitrary data (column 5, lines 17-21). An audio signal can also be arbitrary data and it is also well known in the art that an entropy can be calculated and used for the encoding of an audio signal. Therefore, encoding an audio signal using a calculated entropy does not constitute patentability.

Regarding claim 3, which inherits the limitations of claim 1, Osawa discloses the encoder determines the entropy using the stated equation (column 6, lines 50-55).

Regarding claim 4, which inherits the limitations of claim 1, Osawa discloses the entropy is comprised of bits (column 6, lines 40-55, wherein a symbol is comprised of bits), but does not disclose each bit is coded by amplitude modulation the signal at a pair of frequencies so as to preserve the entropy of the encoded portion of the signal. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to transmit the encoded signal and preserve the entropy, the signal would have to be modulated. The type of modulation scheme is deemed a design choice and does not constitute patentability.

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Regarding claim 5, which inherits the limitations of claim 1, Osawa discloses the signal is coded with the entropy so as to preserve the entropy of the encoded portion of the signal (column 5, line 57-column 6, lines 59).

Regarding claim 6, which inherits the limitations of claim 1, Osawa discloses the entropy is comprised of bits (column 6, lines 40-55, wherein a symbol is comprised of bits) and wherein each bit is coded so as to preserve the entropy of the encoded portion of the signal (column 5, line 57-column 6, lines 59).

Regarding claim 7, which inherits the limitations of claim 1, Osawa discloses the entropy is comprised of bits (column 6, lines 40-55, wherein a symbol is comprised of bits), but does not disclose each bit is coded by swapping a spectral amplitude of at least two frequencies in the signal. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to transmit the encoded signal and preserve the entropy, the signal would have to be modulated and transmitted according to a particular scheme. The type of modulation scheme or transmission scheme is deemed a design choice and does not constitute patentability.

Regarding claim 8, which inherits the limitations of claim 1, Osawa does not disclose the signal is coded with the entropy using frequency hopping. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to transmit the encoded signal and preserve the entropy, the signal would have to be modulated and transmitted according to a particular scheme. The type of modulation scheme or transmission scheme is deemed a design choice and does not constitute patentability.

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Regarding claim 9, which inherits the limitations of claim 1, Osawa does not disclose the signal is coded with the entropy using spectral modulation. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to transmit the encoded signal and preserve the entropy, the signal would have to be modulated and transmitted according to a particular scheme. The type of modulation scheme or transmission scheme is deemed a design choice and does not constitute patentability.

Regarding claim 10, which inherits the limitations of claim 1, Osawa discloses the signal is coded with the entropy using histograms (column 6, lines 40-55).

Regarding claim 11, Osawa discloses a decoder (Fig. 2, block 24) having an input and an output, wherein the input receives a signal, wherein the decoder decodes the signal so as to read an entropy code from the signal (Fig. 2, block 27, column 3, lines 13-25 and column 6, lines 19-67), and wherein the output carries a signal based upon the decoded entropy code

Regarding claim 12, which inherits the limitations of claim 11, Osawa does not disclose the signal is an audio signal. However, Osawa does disclose the encoding/decoding scheme works for arbitrary data (column 5, lines 17-21). An audio signal can also be arbitrary data and it is also well known in the art that an entropy can be calculated and used for the encoding of an audio signal. Therefore, decoding an audio signal using a calculated entropy does not constitute patentability.

Regarding claim 13, which inherits the limitations of claim 11, Osawa discloses the entropy code represents an entropy having a value determined according to the stated equation (column 6, lines 40-55).

Regarding claim 14, which inherits the limitations of claim 11, Osawa does not disclose the entropy code is decoded by amplitude demodulating pairs of frequencies. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to receive and recover the encoded signal and determine the entropy, the signal would have to be demodulated according to the scheme at which signal was modulated and transmitted. The type of modulation/demodulation scheme or transmission/reception scheme is deemed a design choice and does not constitute patentability.

Regarding claim 15, which inherits the limitations of claim 11, Osawa does not disclose the entropy code is decoded by determining swapping events, and wherein the swapping events correspond to swapping of a spectral amplitude of at least two frequencies in the signal. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to receive and recover the encoded signal and determine the entropy, the signal would have to be demodulated according to the scheme at which signal was modulated and transmitted. The type of modulation/demodulation scheme or transmission/reception scheme is deemed a design choice and does not constitute patentability.

Regarding claim 16, which inherits the limitations of claim 11, Osawa does not disclose the entropy code is decoded using frequency hopping. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to receive and recover the encoded signal and determine the entropy, the signal would have to be demodulated according to the scheme at which signal was modulated and transmitted. The type of modulation/demodulation scheme or transmission/reception scheme is deemed a design choice and does not constitute patentability.

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Regarding claim 17, which inherits the limitations of claim 11, Osawa does not disclose the entropy code is decoded using spectral demodulation. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that in order to receive and recover the encoded signal and determine the entropy, the signal would have to be demodulated according to the scheme at which signal was modulated and transmitted. The type of modulation/demodulation scheme or transmission/reception scheme is deemed a design choice and does not constitute patentability.

Regarding claim 18, which inherits the limitations of claim 11, Osawa discloses the decoder determines an entropy of the signal and compares the determined entropy to an entropy represented by the decoded entropy code (column 3, lines 13-25).

Regarding claim 19, which inherits the limitations of claim 18, Osawa does not disclose the decoder detects compression/decompression based on results from the comparison. However, it would have been obvious to one skilled in the art at the time the invention was made that since entropy encoding/decoding is used for the compression/decompression of data that the entropy contains information about the compressed/decompressed data. Thus, knowing the entropy, certain information about the compressed/decompressed data can be accessed.

Regarding claim 20, which inherits the limitations of claim 18, Osawa does not disclose the decoder prevents the used of a device based upon results from the comparison. However, it would have been obvious to one skilled in the art at the time the invention was made that since entropy encoding/decoding is used for the compression/decompression of data that the entropy contains information about the compressed/decompressed data. Osawa discloses updating the encoding/decoding process when the value of the comparison is too large. Without this update,

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it would have been obvious that information could be lost during the encoding/decoding process. Therefore, it would be obvious that if too much information were lost to not further process the signal and consume power in the device.

Regarding claim 21, which inherits the limitations of claim 18, Osawa discloses the decoder determines the entropy based according to the stated equation (column 6, lines 40-55).

Regarding claims 22-31, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 1-10 which is applicable hereto.

Regarding claims 32-41, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 11-18, 20, and 21 which is applicable hereto.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sonohara et al. (U.S. Patent No. 5, 778, 339) discloses calculating an entropy and using it to encode/decode audio signals.

Sonohara (U.S. Patent No. 5, 899, 970) also discloses calculating an entropy and using it to encode/decode audio signals.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 709-872-9306 for regular communications and 703-872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Curtis Odom
September 17, 2003



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